



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| | | |
|---|---|--|
| Applicant's or agent's file reference 30A-90 616 | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416) | |
| International application No. PCT/EP 03/06265 | International filing date (day/month/year) 13.06.2003 | Priority date (day/month/year) 21.06.2002 |
| International Patent Classification (IPC) or both national classification and IPC C08G18/24 | | |
| Applicant CROMPTON GMBH et al. | | |
| <p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 2 sheets.</p> | | |
| <p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the opinion</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p> | | |
| Date of submission of the demand 15.12.2003 | Date of completion of this report 18.06.2004 | |
| Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 | Authorized Officer Müller, M Telephone No. +49 89 2399-8665  | |

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP 03/06265

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*

Description, Pages

1-20 as originally filed

Claims, Numbers

1-11 received on 07.05.2004 with letter of 07.05.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP 03/06265

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

| | | |
|-------------------------------|-------------|------|
| Novelty (N) | Yes: Claims | 1-11 |
| | No: Claims | |
| Inventive step (IS) | Yes: Claims | 1-11 |
| | No: Claims | |
| Industrial applicability (IA) | Yes: Claims | 1-11 |
| | No: Claims | |

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP 03/06265

re item V

Cited documents

- D1: US-A-4 332 927 (SIMONE DOMINIC) 1 June 1982 (1982-06-01)
D2: GB-A-1 250 498 (COSAN CHEMICAL CORPORATION) 20 October 1971 (1971-10-20)
D3: GB-A-1 141 708 (ALLIED CHEM) 29 January 1969 (1969-01-29)
D4: DATABASE WPI Section Ch, Week 199141 Derwent Publications Ltd., London, GB; Class A12, AN 1991-300328 XP002216476 & JP 03 200872 A (TOSHIBA SILICONE KK), 2 September 1991 (1991-09-02)
D5: US 2002/025989 A1 (SCHLONS HANS-HEINRICH ET AL) 28 February 2002 (2002-02-28)

Novelty (Article 33(2) PCT)

D1 discloses the preparation of polyurethanes using dialkyl tin carboxylates. The use of dimethyltin carboxylates is not disclosed. Consequently, the subject-matter of claims 10 and 11 is novel over D1.

The product claimed in claims 1 - 9 of the present application differs in that it contains a dimethyl tin carboxylate as catalyst and thereby has a lower amount of fogging (see examples and comparative examples of the present application). Consequently, also the polyurethane article as claimed in claims 1 - 9 is novel over D1.

D2 and D4 disclose silicone rubbers containing dialkyl tin dicarboxylates. Polyurethane compositions are not disclosed. Novelty over D2 and D4 thus can be acknowledged.

D3 discloses a polyurethane composition comprising a dialkyl tin carboxylate. A tin compound as cited in the present claims is not disclosed. The claimed subject-matter hence is novel over D3.

D5 discloses the use of tin ricinoleate for the preparation of polyurethane foams. Dimethyl tin compounds are not disclosed. Novelty over D5 thus can be acknowledged.

Inventive step (Article 33(3) PCT)

In the same way as the present application, D5 is directed to polyurethane compositions having reduced fogging (paragraph [0006]). D5 thus can be considered to represent the closest prior art.

The problem to be solved is to provide polyurethane articles with further reduced degree of fogging. It is shown in the examples and comparative examples that by using

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP 03/06265

tin catalysts as cited in the present claims, the degree of fogging can be further reduced while the use of tin catalysts different from the claimed ones leads to a higher degree of fogging. The problem cited in the present application thus is solved over D5.

There is no indication in D5 as to the use of tin compounds as cited in the present claims let alone that there is any suggestion that by said use, the degree of fogging can be further reduced. The latter suggestion further is absent in any of D1 - D4. Inventive step therefore can be acknowledged over D5, either taken alone or in combination with any of D1 - D4.

Claims

- 5
1. A polyurethane article with low emission obtainable by condensation reaction including the use of metal catalysts wherein said metal catalyst has a low emissivity and is an organotin compound of the general formula



wherein R is methyl and X is a carboxylate group with 14-20 carbon atoms having at least one olefinic double bond.

- 15
2. Polyurethane article according to claim 1, wherein in said organotin compound X is a carboxylate group derived from a carboxylic acid of the type



wherein R' is a C₁₃-C₁₉-hydrocarbyl group having one or more olefinic double bonds.

- 25
3. Polyurethane article according to claim 1 or 2, wherein said olefinic double bonds are isolated double bonds.
4. Polyurethane article according to claim 2 or 3, wherein R' is an aliphatic, substituted or unsubstituted alkenyl group.
5. Polyurethane article according to anyone of the preceding claims, wherein in said organotin compound said hydrocarbyl and/or carboxylate group is a linear group.
- 30
6. Polyurethane article according to anyone of the preceding claims, wherein in said organotin compound the carboxylate group is selected from:

oleate, ricinoleate, linoleate and linoleate.

- 5
7. Polyurethane article according to anyone of the preceding claims, wherein said organotin compound is liquid at room temperature (20-25°C).
8. Polyurethane article according to anyone of the preceding claims, wherein said polyurethane article is a foamed article.
- 10
9. Polyurethane article of claim 8, wherein the polyurethane foam is derived from aliphatic isocyanate.
10. Use of an organotin compound according to anyone of claims 1 to 7 in the manufacture of polyurethane articles with low emissivity of said organotin compound.
- 15
11. The use of claim 10, wherein said polyurethane article is a foamed article.

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☒ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.